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CLAIMS

1.   An interactive dialogue apparatus comprising:

        at least one input port;

5   two or more output ports;

        means for processing input responses to determine the semantic meaning
thereof; and

        control means for determining a suitable output prompt to be output from at
least one of said output ports in response to a received input response;

10   wherein said output ports are respectively arranged to output output prompts
of different types; the apparatus further comprising

        a first store storing input and output type data indicative of one or more
properties of the input and output ports and/or the input responses and output
prompts communicated therethrough.

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2.   An interactive dialogue apparatus comprising:

        two or more input ports;

        at least one output port;

        means for processing input responses received at one or more of said input
20 ports to determine the semantic meaning thereof; and

        control means for determining a suitable output prompt to be output from
said output port in response to a received input response;

        wherein said input ports are respectively arranged to receive input responses
of different types; the apparatus further comprising

25   a first store storing input and output type data indicative of one or more
properties of the input and output ports and/or the input responses and output
prompts communicated therethrough.

30 3.   An apparatus according to claim 2, and further comprising at least one
additional output port, wherein said control means is further arranged to determine a
suitable output prompt to be output from at least one of said output ports in

response to a received input response; and wherein said output ports are respectively arranged to output output prompts of different types.

4. An apparatus according to claims 1 or 3, wherein for any particular received
5   input prompt, output prompts which are semantically synonymous or which mutually contribute towards a single semantic message independent of type are output from two or more of the output ports.

5. An apparatus according to any of the preceding claims, wherein each input
10 or output port is adapted to connect to one or more input or output devices via respective device gateways.

6. An apparatus according to any of the preceding claims, wherein one of said properties is the utilisation made by a user of each input and output port.
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7. An apparatus according to any of the preceding claims, wherein one of said properties is the connection of appropriate input or output devices to each of said input or output ports.

20 8. An apparatus according to according to any of the preceding claims, wherein one of said properties is user preference value for each of said input and output ports.

9. An apparatus according to according to any of the preceding claims, wherein
25 one of said properties is device property data of input or output devices connected to said input or output ports.

10. An apparatus according to according to any of the preceding claims, wherein one of said properties is implementation data indicative of: whether an output prompt
30 has been implemented in each output prompt type; and/or input parse rules for each input response type.

11.   An apparatus according to according to any of the preceding claims, wherein one of said properties is type-supported data indicative of whether the apparatus is capable of receiving and/or outputting input responses and/or output prompts of each type.

12.   An apparatus according to any of the preceding claims, wherein said input and output type data is updated when: i) any of said one or more properties change; and/or ii) output prompts are sent; and/or iii) input responses are received.

13.   An apparatus according to claim 12, wherein the update of said data comprises instantiating new data structures to store the values of said changed properties, and storing said previous data to give a historical record of said data.

14.   An apparatus according to any of the preceding claims, wherein said input and output type data further includes timing data indicative of the timings of changes in said one or more properties.

15.   An apparatus according to any of the preceding claims, wherein said input and output type data comprises a single data entry for each input and output type, the value taken by a particular data entry being dependent on previous values of any one or more of that or other data entries.

16.   An apparatus according to any of the preceding claims, comprising a second store data defining a dialogue to be held with a user, and dialogue progression conditions which must be met to allow a user to progress through the dialogue, at least some of said conditions involving the stored input and output type data.

17.   An apparatus according to any of claims 1 to 15, and further comprising a second store storing data defining a dialogue model comprising an initial state, a plurality of subsequent states, possible transitions between said states, and for each transition at least one associated condition to be satisfied before that transition is deemed allowable, at least some of said conditions involving the stored input and output type data.

18.   An apparatus according to any of claims 16 to 17, wherein the second store comprises a plurality of distributed storage media.

5   19.   An apparatus according to any of the preceding claims, and further comprising port control means for controlling the connections of input or output devices to said input or output ports in response to the stored input and output type data.

10   20.   An apparatus according to any of the preceding claims, and further comprising means for generating output prompts, said means being operable to generate output prompts adapted for particular output ports in dependence on the stored input and output type data.

15   21.   An apparatus according to any of the preceding claims, wherein said first store comprises a plurality of distributed storage media each logically interconnected.

22.   An apparatus according to any of the preceding claims, wherein the different types of output prompts or input responses comprise audio prompts or responses, or

20   visual prompts or responses, or motor prompts or responses, in any combination thereof.

23.   An interactive dialogue method comprising:

                receiving input responses at least one input port;

25   processing the input responses to determine the semantic meaning thereof;

and

                determining a suitable output prompt to be output from at least one of two or more output ports in response to a received input response;

                wherein said output ports are respectively arranged to output output prompts

30   of different types; the method further comprising:

                storing input and output data indicative of one or more properties of the input and output ports and/or the input responses and output prompts communicated therethrough.

24. An interactive dialogue method comprising:

receiving input responses at least one or more input ports;

processing the input responses received at one or more of said input ports to

5 determine the semantic meaning thereof; and

determining a suitable output prompt to be output from an output port in response to a received input response

wherein said input ports are respectively arranged to receive input responses of different types; the method further comprising:

10 storing input and output data indicative of one or more properties of the input and output ports and/or the input responses and output prompts communicated therethrough.

25. A method according to claim 24, wherein said determining step is further

15 arranged to determine a suitable output prompt to be output from at least one of a plurality of output ports in response to a received input response; and wherein said output ports are respectively arranged to output output prompts of different types.

26. A method according to any of claims 23 to 25, wherein for any particular

20 received input prompt, output prompts which are semantically synonymous or which mutually contribute towards a single semantic message independent of type are output from two or more of the output ports.

27. A method according to any of claims 23 to 26, comprising connecting any

25 one or more of the input or output ports to one or more input or output devices via . respective device gateways.

28. A method according to claims 23 to 27, wherein one of said properties is the utilisation made by a user of each input and output port.

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29. A method according to claims 23 to 28, wherein one of said properties is the connection of appropriate input or output devices to each of said input or output ports.

30. A method according to claims 23 to 29, wherein one of said properties is a user preference value for each of said input and output ports.

5 31. A method according to claims 23 to 30, wherein one of said properties is device property data of input or output devices connected to said input or output ports.

32. A method according to claims 23 to 31, wherein one of said properties is
10 implementation data indicative of whether an output prompt has been implemented in each output prompt type.

33. A method according to any of claims 23 to 32, wherein one of said properties is type-supported data indicative of whether the apparatus is capable of
15 receiving and/or outputting input responses and/or output prompts of each type.

34. A method according to any of claims 23 to 33, wherein said input and output type data is updated when: i) any of said one or more properties change; and/or ii) output prompts are sent; and/or iii) input responses are received.
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35. A method according to claim 34, wherein the update of said data comprises instantiating new data structures to store the values of said changed properties, and storing said previous data to give a historical record of said data.

25 36. A method according to claims 23 to 35, wherein said input and output type data further includes timing data indicative of the timings of changes in said one or more properties.

37. A method according to claims 23 to 36, wherein said input and output type
30 data comprises a single data entry for each input and output type, the value taken by a particular data entry being dependent on previous values of any one or more of that or other data entries.

38.   A method according to any of claims 23 to 37, and further comprising storing data defining a dialogue to be held with a user, and dialogue progression conditions which must be met to allow a user to progress through the dialogue, at least some of said conditions involving the stored input and output type data.

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39.   A method according to any of claims 23 to 37, and further comprising storing data defining a dialogue model comprising an initial state, a plurality of subsequent states, possible transitions between said states, and for each transition at least one associated condition to be satisfied before that transition is deemed

10 allowable, at least some of said conditions involving the stored input and output type data.

40.   A method according to claims 38 or 39, wherein said data defining the dialogue model is stored on a plurality of storage media each of which is logically

15 interconnected.

41.   A method according to any of claims 23 to 40, and further comprising controlling the connections of input or output devices to said input or output ports in response to the stored input and output type data.

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42.   A method according to any of claims 23 to 41, and further comprising the step of generating output prompts adapted for particular output ports in dependence on the stored input and output type data.

25 43.   A method according to any of claims 23 to 42, wherein said input and output type data is stored on a plurality of distributed storage media.

44.   A method according to any of claims 23 to 43, wherein the different types of output prompts or input responses comprise audio output prompts or input

30 responses, or visual output prompts or input responses, or motor outer prompts or input responses, in any combination thereof.

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45.   A computer program or suite of programs so arranged such that when executed on a computer the program or programs cause the computer to perform an interactive dialogue method according to any of claims 23 to 44.

5 46.   A computer program or suite of programs so arranged such that when loaded into a computer it or they renders the computer an apparatus according to any of claims 1 to 22.

47.   A computer readable storage medium storing at least a computer program or
10 at least one of a suite of programs according to either of claims 45 or 46.